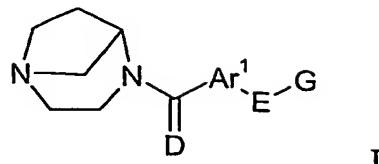


CLAIMS

1. A compound according to Formula I:



5 wherein:

D is selected from oxygen, sulfur or N(R<sup>1</sup>)<sub>2</sub>;

Ar<sup>1</sup> is selected from a 5- or 6-membered aromatic or heteroaromatic ring having 0, 1 or 2 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms, or selected from an 8-, 9- or 10-membered fused aromatic or heteroaromatic ring system having 0, 1, 2 or 3 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms;

E is a single bond, -O-, -S-, or -NR<sup>2</sup>;

G is selected from hydrogen, C<sub>1</sub>-C<sub>4</sub>alkoxy or Ar<sup>2</sup>, where Ar<sup>2</sup> is a 5- or 6-membered aromatic or heteroaromatic ring having 0, 1 or 2 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms;

15 where each Ar<sup>1</sup> or Ar<sup>2</sup> moiety independently is unsubstituted or has 1, 2 or 3 substituents selected from -R<sup>3</sup>, -C<sub>1</sub>-C<sub>6</sub>alkyl, -C<sub>2</sub>-C<sub>6</sub>alkenyl, -C<sub>2</sub>-C<sub>6</sub>alkynyl, halogen, -CN, -NO<sub>2</sub>, -CF<sub>3</sub>, -S(O)<sub>n</sub>R<sup>3</sup>, -NR<sup>2</sup>R<sup>3</sup>, -CH<sub>2</sub>NR<sup>2</sup>R<sup>3</sup>, -OR<sup>3</sup>, -CH<sub>2</sub>OR<sup>3</sup> or -CO<sub>2</sub>R<sup>4</sup>;

R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are independently selected at each occurrence from hydrogen, -C<sub>1</sub>-C<sub>4</sub>alkyl, aryl, heteroaryl, -C(O)R<sup>4</sup>, -C(O)NHR<sup>4</sup>, -CO<sub>2</sub>R<sup>4</sup> or -SO<sub>2</sub>R<sup>4</sup>, or

20 R<sup>2</sup> and R<sup>3</sup> in combination is -(CH<sub>2</sub>)<sub>j</sub>G(CH<sub>2</sub>)<sub>k</sub>- wherein G is oxygen, sulfur, NR<sup>4</sup>, or a bond;

j is 2, 3 or 4;

k is 0, 1 or 2;

n is 0, 1 or 2, and

25 R<sup>4</sup> is independently selected at each occurrence from hydrogen, -C<sub>1</sub>-C<sub>4</sub>alkyl, aryl, or heteroaryl,

and stereoisomers, enantiomers, *in vivo*-hydrolysable precursors or a pharmaceutically-acceptable salt thereof.

30 2. A compound according to Claim 1, wherein:

D is oxygen;

Ar<sup>1</sup> is selected from phenyl or a 5-membered heteroaromatic ring having 0 or 1 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms, or selected from a 9-membered fused aromatic or heteroaromatic ring system having 0, 1, 2 or 3 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms;;  
5 wherein:

E is a single bond;

G is selected from hydrogen, methoxy or Ar<sup>2</sup>, where Ar<sup>2</sup> is selected from a 6-membered aromatic or heteroaromatic ring having 0 or 1 nitrogen atoms, 0 or 1 oxygen atoms, and 0 or 1 sulfur atoms;  
10 where each Ar<sup>1</sup> or Ar<sup>2</sup> moiety independently is unsubstituted or has 1, 2 or 3 substituents selected from halogen, -CN, -NO<sub>2</sub>, -CF<sub>3</sub>, -CH<sub>3</sub> or -C<sub>2</sub>H<sub>5</sub>;  
and stereoisomers, enantiomers, *in vivo*-hydrolysable precursors or a pharmaceutically-acceptable salt thereof.  
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3. A compound according to Claim 1, wherein:

D is oxygen;

Ar<sup>1</sup> is selected from phenyl, furanyl, thiophenyl or 1-methyl-1H-pyrrolyl;

E is a single bond;

G is selected from hydrogen, methoxy, phenyl or pyridyl, and  
20 Ar<sup>1</sup> bears 1 halogen substituent;  
and stereoisomers, enantiomers, *in vivo*-hydrolysable precursors or a pharmaceutically-acceptable salt thereof.

25 4. A compound according to Claim 1, wherein:

E represents a single bond; or an enantiomer thereof, or a pharmaceutically-acceptable salt thereof.

5. A compound according to Claim 1, wherein:

30 Ar<sup>1</sup> is furanyl or thiophenyl having optional substituents as defined herein.

6. A compound according to Claim 1, selected from:

(1,4-diazabicyclo[3.2.1]oct-4-yl)-(5-pyridin-3-yl-thiophen-2-yl)-methanone;

(1,4-diazabicyclo[3.2.1]oct-4-yl)-(5-phenyl-thiophen-2-yl)-methanone;  
[5-(4-chloro-phenyl)-furan-2-yl]- (1,4-diazabicyclo[3.2.1]oct-4-yl)-methanone;  
(1,4-diazabicyclo[3.2.1]oct-4-yl)-(5-phenyl-furan-2-yl)-methanone;  
benzofuran-2-yl-(1,4-diazabicyclo[3.2.1]oct-4-yl)-methanone;

5 (1,4-diazabicyclo[3.2.1]oct-4-yl)-(1-methyl-1*H*-indol-2-yl)-methanone;  
biphenyl-3-yl-(1,4-diazabicyclo[3.2.1]oct-4-yl)-methanone;  
(1,4-diazabicyclo[3.2.1]oct-4-yl)-(4-methoxy-phenyl)-methanone;  
(1,4-diazabicyclo[3.2.1]oct-4-yl)-(1*H*-indol-5-yl)-methanone;  
(1,4-diazabicyclo[3.2.1]oct-4-yl)-naphthalen-2-yl-methanone;

10 4-[5-((R)-1,4-diaza-bicyclo[3.2.1]octane-4-carbonyl)-thiophen-2-yl]-*N,N*-dimethyl-  
benzamide;  
3-[5-((R)-1,4-diaza-bicyclo[3.2.1]octane-4-carbonyl)-thiophen-2-yl]-*N,N*-dimethyl-  
benzamide;  
(R)-1,4-diaza-bicyclo[3.2.1]oct-4yl-(5-phenyl-oxazol-2-yl)-methanone hydrochloride;

15 (R)-1,4-diaza-bicyclo[3.2.1]oct-4yl-(5-pyridin-3-yl-oxazol-2-yl)-methanone dihydrochloride,  
or  
(R)-1,4-diaza-bicyclo[3.2.1]oct-4yl-(5-pyridin-4-yl-oxazol-2-yl)-methanone,  
or stereoisomers, enantiomers, *in vivo*-hydrolysable precursors or a pharmaceutically-  
acceptable salt thereof.

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7. A method of treatment or prophylaxis of a disease or condition in which activation of  
the  $\alpha 7$  nicotinic receptor is beneficial which method comprises administering a  
therapeutically-effective amount of a compound according to Claim 1 to a subject suffering  
from said disease or condition.

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8. The method of Claim 7, wherein said disease or condition is anxiety, schizophrenia,  
mania or manic depression.

9. A method of treatment or prophylaxis of neurological disorders, psychotic disorders  
30 or intellectual impairment disorders, which comprises administering a therapeutically  
effective amount of a compound according to Claim 1.

10. The method of Claim 9, wherein said disorder is Alzheimer's disease, learning deficit, cognition deficit, attention deficit, memory loss, Attention Deficit Hyperactivity Disorder, Parkinson's disease, Huntington's disease, Tourette's syndrome, neurodegenerative disorders in which there is loss of cholinergic synapses, jetlag, nicotine addiction, craving, pain, or 5 ulcerative colitis.
11. A method for inducing the cessation of smoking comprising administering an effective amount of a compound according to Claim 1.
- 10 12. A pharmaceutical composition comprising a compound according to Claim 1 and a pharmaceutically-acceptable diluent, lubricant or carrier.
13. A method of treatment or prophylaxis of a disease or condition in which activation of the  $\alpha 7$  nicotinic receptor is beneficial which method comprises administering a 15 therapeutically-effective amount of a pharmaceutical composition according to Claim 12 to a subject suffering from said disease or condition.
14. The method of Claim 13, wherein said disease or condition is anxiety, schizophrenia, mania or manic depression.
- 20 15. A method of treatment or prophylaxis of neurological disorders, psychotic disorders or intellectual impairment disorders, which comprises administering a therapeutically effective amount of a pharmaceutical composition according to Claim 12.
- 25 16. The method of Claim 10, wherein said disorder is Alzheimer's disease, learning deficit, cognition deficit, attention deficit, memory loss, Attention Deficit Hyperactivity Disorder, Parkinson's disease, Huntington's disease, Tourette's syndrome, neurodegenerative disorders in which there is loss of cholinergic synapses, jetlag, nicotine addiction, craving, pain, or ulcerative colitis.
- 30 17. A method for inducing the cessation of smoking comprising administering an effective amount of a pharmaceutical composition according to Claim 12.

18. The use of a compound according to Claim 1, an enantiomer thereof or a pharmaceutically-acceptable salt thereof, in the manufacture of a medicament for the treatment or prophylaxis of human diseases or conditions in which activation of the  $\alpha 7$  nicotinic receptor is beneficial selected from neurological disorders, psychotic disorders, 5 intellectual impairment disorders, Alzheimer's disease, learning deficit, cognition deficit, attention deficit, memory loss, Attention Deficit Hyperactivity Disorder, anxiety, schizophrenia, mania or manic depression, Parkinson's disease, Huntington's disease, Tourette's syndrome, or neurodegenerative disorders in which there is loss of cholinergic synapses.

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19. The use of a compound according to Claim 1, in the manufacture of a medicament for the treatment or prophylaxis of jetlag, pain, or ulcerative colitis or to facilitate the cessation of smoking or the treatment of nicotine addiction or craving including that resulting from exposure to products containing nicotine.

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